Frankly Speaking About

new discoveries in cancer

Special Focus on

colorectal cancer

Presented by

the wellness community®

cancer support, education and hope

The Wellness Community (TWC) is an international, non-profit organization dedicated to providing free support, education, and hope to people affected by cancer. Through participation in professionally led support groups, educational workshops, and mind-body activities, people affected by cancer learn vital skills that enable them to regain control, reduce isolation, and restore hope, regardless of the stage of their disease. For more information, visit *www.thewellnesscommunity.org.*

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table of contents

being patient active with colorectal cancer

Receiving a cancer diagnosis is often frightening and overwhelming. The shock can make talking (and listening) to your doctor, your nurse — even your family — difficult. Furthermore, hearing your treatment options can be very confusing, especially given the many new treatments recently developed or being studied. This booklet is designed to help you ***maintain hope*** and ***take control*** over your treatment decisions by giving you a better understanding of ***New Discoveries in Colorectal Cancer Treatment*** and how they work. Learning about the newest developments in colorectal cancer treatment can help you participate actively in your cancer experience. Your health care team should be your partner in this journey.

The Wellness Community's ***Patient Active Concept**** defines a series of actions, behaviors, and attitudes that people with cancer and their loved ones may use to improve their quality of life and enhance the possibility of recovery. First and foremost, being ***Patient Active*** is about feeling and acting empowered. It is about your ***active participation*** in the choices you and your health care team make about treatment. There is no right or wrong way to be ***Patient Active*** because you decide what is best for you. Choosing to be ***Patient Active*** is not about one monumental decision, but rather a series of small, incremental choices. These choices can help you regain a sense of control over your treatment and your life in general. Taking steps to gain information, seek support, and learn how to improve your quality of life can help you feel empowered.

Words that are bold italic in this booklet are defined in the Glossary on page 28.

Being Patient Active with Colorectal Cancer

Realize That You Are Not Alone

Some people with cancer find that they feel detached from the lives they knew before their diagnosis. If you begin to feel alone and have stopped doing the things you enjoyed before the diagnosis but are still able to do those activities, start them again. Tell your friends how you are feeling. Ask them to help you not isolate yourself. Give yourself permission to be alone when you need to be and learn to identify when you need to be with others.

Make Plans for the Future

You may find it helpful to set short-term goals and make long-range plans. If you aren't making plans for the future, you may subconsciously believe that there is no future. Making plans in and of itself can be a pleasant and positive experience.

Help Others Understand What You Need

Some of your friends and family may act differently toward you after the diagnosis. They need your help. Most people will respond positively when you tell them openly how you want them to treat you and help you. Your greatest support may come from unexpected people and places.

Keep Intimacy and Affection in Your Life

Physical closeness and intimacy are an essential part of our lives. Although you may be experiencing physical or emotional symptoms that make intimacy difficult, remember that the path to solving problems lies in communication and openness between you and your partner.

Seek Emotional Support

We are, by nature, social beings connected to other people on a personal level and as part of a greater community. Getting help and seeking support from different sources are as important to your cancer treatment and recovery as chemotherapy, radiation, or surgery. People who are able to connect with others in a safe, constructive way, such as at The Wellness Community or through other support organizations, generally note an improvement in their quality of life during cancer treatment and beyond. This type of support can help you regain a sense of control, feel less alone, and find hope to sustain you throughout the cancer experience and beyond.

Evoke the Relaxation Response

The relaxation response is a calm, controlled physical state that may enhance the immune system for a period of time. The more you practice relaxation, the easier it becomes. Consider joining a relaxation or meditation program in your community.

Retain as Much Control of Your Life as Is Reasonable

If you are feeling that you have lost control to health care professionals, loved ones, or even the disease itself, list things you are feeling less control over and decide what is realistic for you to take back. Even the simplest things, such as setting aside time each day for an activity you enjoy, can help you enhance your feelings of control.

Become Partners with Your Doctor

Your doctor will be looking for clues about how you want to receive information, make decisions, and learn more about colorectal cancer and its treatment. Discuss these matters with your doctor. If you have tried and cannot develop a satisfactory relationship with your doctor, consider finding another one.

Participate in Support Groups

Support groups provide a way to meet other people with cancer and/or their loved ones to share concerns and coping strategies. People in similar situations share information about ways to handle problems, family concerns, talking with doctors, etc. People who participate in support groups at The Wellness Community have said that they are better able to:

- Make active choices in their recovery;
- Make changes in their lives that they think are important;
- Partner with their doctor(s);
- Access valuable resources; and
- Develop a new attitude toward their illness.

Locating Support Groups

Support groups are often held weekly or monthly for a group of people who are experiencing similar problems as a result of their cancer diagnosis. These groups help people get together to talk with and learn from the experiences of others as a means to gain insight into their own situation. Support groups are often facilitated by oncology social workers or other health care professionals through community organizations and cancer centers or by interested groups of others who have colorectal cancer.

- ***The Wellness Community*** and other community cancer support organizations offer professionally facilitated weekly support groups for people with all types of cancer and separate support groups for caregivers. Contact The Wellness Community-National at 1-888-793-WELL or *www.thewellnesscommunity.org* to find a Wellness Community near where you live or work, or to access a real-time Online Support Group.
- ***The Colon Cancer Alliance*** *(www.ccalliance.org)* has a Voices Campaign and a Buddy Program where people can connect with and learn from other people with colorectal cancer. Call its patient support hotline at 1-877-422-2030.
- **Cancer*Care*** *(www.cancercare.org)* provides professional, individual and group counseling over the phone, free of charge. Call 1-800-813-HOPE fore more information.
- You also can ask your doctor, nurse, or social worker about hospital or community groups near you.

Locating Individual or Family Counseling

Similar to support groups but with a more one-on-one style, personalized counseling services can help individuals with cancer and their families learn more effective ways to communicate with each other about their illness, cope better with the normal feelings and reactions to colorectal cancer, and address specific changes in roles and family routines that may result from cancer.

- Ask whether your hospital or treatment center provides counseling services for people with cancer and their families or caregivers.
- Ask the doctor, nurse, or social worker for a referral to outside individual or family counseling, and make sure you find someone experienced in dealing with the particular challenges facing people affected by cancer.
- Talk to your spiritual counselor about counseling services.
- Contact community agencies that provide counseling services or referral services to professional mental health organizations.
- Ask if your insurance plan covers this type of counseling.

Remember that Hope Can Take Many Forms

Every type of cancer has some recovery rate. Hope, therefore, is not only desirable, but in many situations quite reasonable. Hope can take many forms. If the hope of physical recovery becomes unlikely, then one can hope for spiritual or emotional recovery. People who find something that gives them hope often do better emotionally with whatever challenges lie ahead.

overview of colorectal cancer

When colorectal cancer is detected early, it is often curable. Although colorectal cancer is the second most common cause of cancer death among men and women in the United States, its death rate has been declining for the past 20 years.[1] More colorectal cancer cases are detected early, and treatments have improved.

Colorectal cancer can begin in either the colon or the rectum. Cancer that begins in the colon is called colon cancer, cancer that begins in the rectum is called rectal cancer, and treatment approaches differ depending on where the cancer begins. These cancers are generally grouped together under the heading "colorectal cancer."

How or if cancer spreads in the body is unpredictable by nature. If colon cancer spreads, it may start by circling the colon like a ring before invading neighboring organs and moving through the lymph and blood systems. Colon cancer cells may spread via the blood throughout the body to the liver, lungs, and other organs.

Rectal cancer starts to spread around the rectum and moves laterally into the surrounding fat and muscles. It can then invade nearby organs and spread through the lymph and blood systems. Like colon cancer, rectal cancer cells may spread via the blood throughout the body to the liver, lungs, and other organs. The last part of the rectum contains the rectal sphincter, or anus. This is the muscle that controls bowel movements. To preserve bowel function, it is necessary to preserve the rectal sphincter during surgery.

Most colorectal cancers begin in ***polyps***, which are non-cancerous growths that may develop on the inner wall of the colon and rectum as people get older. There are several forms of polyps, but the ones that can become cancerous are adenomatous polyps, or ***adenomas***. One way to prevent colorectal cancer is to detect polyps through a regularly performed test called a ***colonoscopy*** and remove them before they become cancerous.

A large proportion of colon and rectal cancers form cancerous tumors called ***adenocarcinomas*** — cancers of the cells that line the inside tissue of the colon and rectum. Other types of tumors, such as carcinoid tumors, gastrointestinal stromal tumors, and lymphomas, occur far less frequently but also can begin in the colon or rectum.

Diagnosing Colorectal Cancer

Doctors use many tests to diagnose cancer and to determine if it has spread, or ***metastasized***. Some tests also can help determine which treatments may be the most effective.

Surgery is generally the first step in the diagnosis of colorectal cancer. For most types of cancer, a ***biopsy*** is the only way to make a definitive diagnosis of cancer. A biopsy is a procedure that involves removing a small sample of tissue from the colon and sending it to a laboratory to be checked for cancer. Biopsies can be performed during a colonoscopy, or they can be done on any tissue that is removed during surgery. Imaging tests may then be used to find out whether the cancer has metastasized to other areas in the body.

Staging Colorectal Cancer

In colorectal cancer, ***staging*** is a process to describe the depth of the tumor penetration or invasion of the bowel wall, the number of lymph nodes involved, and the presence or absence of distant metastases. Accurate information about the stage of cancer is critical for your doctor to determine the most appropriate treatment plan for your specific situation and help to determine your ***prognosis*** or recurrence. The stage provides a common way to describe the cancer so that doctors can work together to plan the best treatments for each case.

One tool that doctors use to describe the stage of colorectal cancer is the ***TNM system***. This system uses three criteria to judge the stage of the cancer:

T (for tumor), plus a letter or number (0 to 4) to describe how deeply the ***primary tumor*** has penetrated the bowel lining;

N (for node), plus a letter or number (0 to 2) to describe if, or how far, the tumor has spread to the lymph nodes; and

M (for metastasis), plus a letter or number (0 or 1) to describe if, or how far, the cancer has spread to other parts of the body.

Another staging method is the ***modified Duke's classification***, which separates colorectal cancers into four groups (A, B, C, or D) to describe the location of the tumor. The TNM and modified Duke's classification results are combined to determine the stage of cancer.

There are five stages of cancer: ***stage 0*** (zero), ***stage I***, ***stage II***, ***stage III***, and ***stage IV***, with stage 0 indicating the lowest level of a cancer's development, and stage IV representing the most advanced and aggressive stage of cancer:

- ***Stage 0:*** The cancer has not grown beyond the inner lining of the colon, and it can be removed easily with a good prognosis.
- ***Stage I:*** The cancer has grown through several layers of the colon, but it has not spread outside of the colon wall itself.

- ***Stage II:*** The cancer has grown through the wall of the colon and may extend into nearby tissue. It has not yet spread to the lymph nodes.
- ***Stage III:*** The cancer has advanced to spread to nearby lymph nodes, but it has not yet spread to other parts of the body. About 66% of people whose colon cancer has spread to lymph nodes or nearby organs survive 5 years.
- ***Stage IV:*** In this stage, the cancer has spread to distant organs and tissues such as the liver, lungs, peritoneum, or ovaries. Once the colon cancer has spread to distant parts of the body, 5-year survival drops to 9%.

Determining Tumor Grades

Doctors also may use the term ***grade***, which describes how much the tumor appears like normal tissue. The grade of a tumor can help the doctor predict how quickly the cancer might grow. Cancer cells that resemble normal tissue are called "well-differentiated" and are classified as low-grade cancers. In well-differentiated tumors, doctors can clearly see different types of cells grouped together. Cancer cells that look less like normal cells are called "poorly differentiated" or "undifferentiated" and are classified as high-grade cancers. In general, low-grade tumors have a better prognosis.

Finding a Colorectal Cancer Specialist

After receiving a colorectal cancer diagnosis, you should be referred to a ***medical oncologist***, a doctor who specializes in the treatment of cancer – ideally an oncologist who specializes in cancers of the colon and rectum. Specialists such as a ***colorectal surgeon*** have completed advanced training in the treatment of colon and rectal problems in addition to full training in general surgery. It is important to make sure that your surgeon is a specialist in colorectal cancer – the same holds true if you need a radiation oncologist. The resource section of this booklet includes organizations that can help you find a colorectal cancer specialist.

The Importance of a Second Opinion

You may wish to seek a second opinion or go to a ***comprehensive cancer center*** to get a consultation. It is worth the time to pursue this because you want to make sure that other specialists in colorectal cancer agree with the treatment recommended to you and that you are on the right course. Many people with cancer report that they feel better and more in control when they have talked with another expert about their diagnosis and treatment. The second opinion helps them feel more confident that they have explored every possible avenue to receive the best available care.

Requesting a second opinion is normal, and your doctor should not be offended. Your doctor will appreciate that you are gathering vital information to help you make informed decisions throughout your treatment.

Sometimes you may get conflicting opinions. If there is a difference of opinion, you may consider a third consultation.

When Is a Second Opinion from a Colorectal Cancer Specialist Important?

- If you feel uncertain about your initial diagnosis or the treatment options that you have discussed with your doctor.
- If you were initially diagnosed in a small hospital or through a managed care plan that does not treat many people with colorectal cancer and you think that your health care team might not be familiar with all of the possible treatment options.
- If you would like to enroll in a ***clinical trial*** (a test of new and investigational medications or treatment methods) focused on colorectal cancer.

Tips for Getting the Most out of a Second Opinion

- Arrange to have a complete copy of your medical records, including original x-rays — this includes magnetic resonance imaging (MRI), computer tomography (CT), and positron emission tomography (PET) scans — pathology slides, laboratory results, and medical reports so that you can share this information with another doctor. You will need to give the pathology department at least 48 hours to prepare new slides for you. This may involve an additional charge, and it may not be covered by your insurance. Ask whether there is an additional charge when you request the slides.
- Write down questions that you would like to ask your doctor and health care team, and bring the list with you to your appointment.
- Bring a friend or family member to your appointments to help take notes. You also can ask about bringing a tape recorder. If the doctor says that it is all right to tape the conversation, you can use the tape to refer back to the discussion with other family members and to refresh your own memory.

If you receive different treatment recommendations from each doctor, discuss the pros and cons of the proposed treatment plans with the doctor with whom you feel more comfortable. Be assured that it is standard practice for you to take the information you learned from a "second opinion doctor" back to the first doctor.

Questions for Your Doctor

The questions below may help you organize your thoughts about what you want to ask your doctor at different stages in your care.[2] Anything related to your diagnosis and treatment is appropriate, but for some questions, your doctor may not have the information yet to be able to give you an answer.

BEFORE SURGERY	➤ What do you know about my cancer at this point? ➤ What other tests will be run before surgery and what do they involve? ➤ Can you describe the surgery I will be having? Is this an inpatient or outpatient surgery? Do I have other options? ➤ How soon after the surgery will I have all test results and a firm diagnosis? ➤ How many times have you performed this type of operation successfully? ➤ Will I need any appliances after the surgery, such as an ostomy? ➤ How long does it usually take to recover from the surgery? ➤ What kind of side effects can I expect after surgery? What activities might be restricted for me and for how long?
AFTER SURGERY	➤ Does my diagnosis mean that my blood relatives are at higher risk for colorectal cancer? Should they talk to their doctors about screening? ➤ What is my prognosis? ➤ What are my treatment options, based on my diagnosis? ➤ Are they standard treatments or part of a clinical trial? ➤ What are the risks and possible side effects, and what are the potential benefits? ➤ How long does each treatment option last? ➤ When should I see you for follow-up after the surgery?
OTHER	➤ Do all of the specialists involved in my care participate in my insurance plan? ➤ What other types of support services are available for my family and me? ➤ What is the best way to reach a member of my health care team in case of an emergency, and which one(s) should I call?

treatment considerations

Newly Diagnosed Colorectal Cancer

A treatment plan put together by your health care team will likely include one or more of the four main types of treatment for colorectal cancer: surgery, ***radiation therapy***, standard ***chemotherapy***, and newer, ***targeted therapies.*** Or your doctor might suggest a clinical trial involving a new type of treatment.

The successful treatment of colorectal cancer requires a multidisciplinary team of health care professionals who know how to integrate new therapies into your treatment where appropriate. As mentioned earlier, it is often helpful to get a second opinion so that you feel more confident about the treatment plan you choose.

Surgery

Surgery (also called ***resection***) of the colon is the principal treatment for colon cancer. It involves cutting away the portion of the colon that contains cancer and reconnecting the two healthy parts (***anastomosis***). Surgery also may be needed if there is a blockage or bleeding. Surgery for colorectal cancer almost always involves opening the abdomen, but sometimes smaller tumors can be removed using a technique called ***laparoscopy***. *(See **Surgical Advances**)*

In a minority of cases, a person with rectal cancer may need to have a ***colostomy*** depending on the size and location of their tumor. A colostomy is a surgical opening, or ***stoma***, through which the colon is connected to the abdominal surface to provide a pathway for waste to exit the body. Waste is collected in a bag, which the person wears. Sometimes a colostomy is permanent, but often it is temporary until the tumor has shrunk down from the chemotherapy. With modern surgical techniques and the use of radiation therapy and chemotherapy to treat locally advanced disease before surgery, many people with cancer of the rectum will not require a permanent colostomy. When a colostomy is no longer necessary, it can be closed through a surgical procedure called a ***colostomy reanastomosis***. During this procedure, a surgeon reattaches the portion of the bowel that has been brought out to the skin with the rest of the bowel inside the abdomen. The procedure is done under general anesthesia and usually requires a 7 to 10 day hospital stay. People with colostomies can get support and information from the United Ostomy Association *(www.uoa.org)*.

Radiation Therapy

This treatment, also called radiotherapy, directs a beam of high-energy rays (x-rays or other ***ionizing radiation***) at a tumor. Radiation can slow or stop tumor growth by destroying cancer cells. In some cases, radiation is used to shrink a tumor before surgery to remove it. After surgery, it also can be used to destroy any remaining cancer cells. Radiation on rectal tumors after surgery seems to be best for most people, because it doesn't delay surgery, and surgery that saves the muscles and sphincter control in the anus is more successful if the area has not been irradiated. Both internal and external radiation are aimed at shrinking the primary tumor and preventing a recurrence.

Chemotherapy

Chemotherapy is a general term for any treatment that involves the use of drugs, not just cancer treatment. When used to treat cancer, chemotherapy is usually a combination of drugs taken over a course of several weeks or months. The drugs can be taken orally, through injection, or intravenously, depending on the person's general health, the type of cancer, and the extent to which it has spread in the body. Chemotherapy is a systemic treatment. It can be used to slow the cancer's growth, to prevent it from spreading, to relieve symptoms caused by the cancer, or to eliminate all cancer cells from the body. Even when chemotherapy cannot cure the cancer, it often can help a person live longer and more comfortably.

If a person is going to be on long-term or continuous chemotherapy, the oncologist may recommend an intravenous catheter. These devices are inserted into the chest under local anesthesia and can be used to draw blood and administer chemotherapy. For many people, these devices make the experience of having chemotherapy much more tolerable.

Chemotherapy can be used as ***neoadjuvant therapy*** (before surgery) to shrink the tumor, as is sometimes the case in rectal cancer. It also can be used as ***adjuvant therapy*** (after surgery), when the goal is to prevent a return of cancer. When it is used in Duke's stage D to slow the spread of cancer and relieve pain, it is called ***palliative chemotherapy***.

New Therapies

Treatment for colorectal cancer is constantly evolving; one of the new therapies might be appropriate for you. In addition to advances in surgical treatments, radiation therapy, and chemotherapy, there are now a wide variety of more patient-tailored treatments, collectively called targeted molecular therapies, or simply targeted therapies. These include immunotherapy, anti-angiogenesis therapy, and cancer vaccines. ***New Discoveries in Colorectal Cancer*** (page 13) describes these new treatments in greater detail for both people with newly diagnosed colorectal cancer and those who experience a cancer recurrence.

When Cancer Recurs

Recurrence means the cancer has returned after a period of ***remission***, when the cancer's growth stopped or slowed after initial treatment. If the cancer has recurred in only one part of the body, surgery to remove it may be the only treatment. If the cancer has spread to several parts of the body, often chemotherapy or targeted molecular therapy will be recommended. Radiation therapy also may be used to manage painful areas where the cancer has spread. Your doctor may suggest participation in a clinical trial. For people with advanced disease who have not been helped by treatment, the goal of medical intervention will be palliation — treatment to control symptoms rather than cure.

Managing Recurrence: Talk to Your Doctor About Follow-up Testing

When colorectal cancer recurs, it usually happens within five years of initial diagnosis, but it can return within three years after surgery, especially for people with stage II or stage III cancer. For the first three years after you finish your treatment, you should see your doctor for a physical examination every three to six months. After that, an annual physical examination is recommended. Regularly scheduled doctor visits and an open, honest relationship with your doctor are the most important steps you can take in your medical care.

For more information on colorectal cancer diagnosis, staging, and treatment, visit *The Virtual Wellness Community* at *www.thewellnesscommunity.org*.

new discoveries in colorectal cancer

Research through clinical trials is ongoing in many areas to find better diagnostic tools, more targeted and less harmful treatments, and ultimately to find a cure for colorectal cancer. This section highlights some of the latest developments, including innovative and hopeful advances for colorectal cancer survivors.

The National Cancer Institute (1-800-4-CANCER), the American Cancer Society (1-800-ACS-2345), the National Institutes of Health (*www.clinicaltrials.gov*) and organizations such as the National Cancer Cooperative Groups (*www.trialcheck.org*) and the Colon Cancer Alliance (*www.ccalliance.org*) offer more information about new and ongoing clinical trials for colorectal cancer.

Targeted Therapy

The field of targeted molecular therapy has reported several exciting discoveries and advances recently. Unlike traditional approaches such as radiation and chemotherapy, targeted therapies attack cancer cells without damaging healthy cells. This approach can produce fewer side effects.

Monoclonal Antibodies

The targeted therapies include a new series of drugs involving ***monoclonal antibodies***, proteins that trigger the body's immune system to fight cancer more effectively. When the immune system identifies an ***antigen***, a substance it identifies as foreign and attacks, it produces a protein called an ***antibody*** that is specific to that antigen. The antibody then attaches to the antigen, setting off a reaction that usually destroys the antigen. This process protects the body against infection and disease. Monoclonal antibodies can destroy cancer cells in three ways: by blocking signals from the cell's nucleus, which acts as its control center; by attracting other cells of the immune system or other proteins to destroy the cell; or by activating the self-destruct signal programmed into the cell (a process called ***apoptosis***). The most common side effects of monoclonal antibody therapy are fever, chills, nausea, headache, and fatigue. These can be managed with certain dietary or exercise changes, for example, or with medications if a severe reaction occurs.

Epidermal Growth Factor Receptor

Epidermal growth factor receptor (EGFR) is a substance that functions as a docking station for a companion protein, which is epidermal growth factor (EGF). When the receptor and its matched protein join, the connection triggers activity coded into the protein. In the case of EGF, that activity may contribute to tumor growth. Both normal and cancer cells contain EGFR and EGF. If tests show high levels of EGFR on cancer cells, your doctor may recommend treatment that targets EGFR, to interfere with the signals that tell the cancer to grow.

Erbitux® (cetuximab) is one targeted therapy designed to block the growth signals of EGFR. Researchers have reported that a combination of Erbitux and the chemotherapy drug Camptosar® (irinotecan) shrinks tumors and slows growth of new tumors in people with advanced colorectal cancer, but it is not known if it will improve symptoms or help patients live significantly longer. The Food and Drug Administration (FDA) approved this new drug combination in 2004 for use in advanced colorectal cancer.[3] Potential side effects include difficulty breathing, low blood pressure, rash, fatigue, and fever.

Panitumumab is another new therapy that shows promise for treatment of metastatic colorectal cancer. Panitumumab is a fully human monoclonal antibody directed against EGFR. Early clinical trial results presented in May 2005 demonstrated that panitumumab as a single agent had an antitumor effect in patients with metastatic colorectal cancer who did not respond to standard chemotherapy. Panitumumab is now in Phase III clinical trials given in combination with Avastin plus Elotaxin or Camptosar.[4]

Tyrosine Kinase Inhibitors

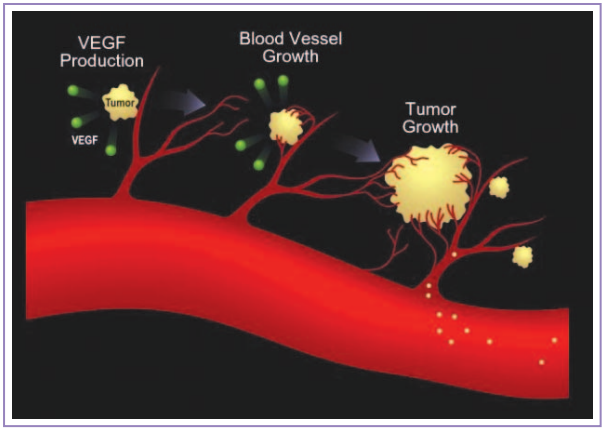
The ***tyrosine kinase*** area of EGFR is the part of the cell that signals it to divide and multiply, thereby encouraging cancer cells to grow. The tyrosine kinase inhibitor, developed to inhibit or stop the cells from dividing and growing, that is furthest in development is Iressa® (gefitinib, ZD1839) – which was originally developed to treat lung cancer. Clinical trials show that people with advanced colorectal cancer can also tolerate Iressa, and it may stop the growth of colorectal cancer cells. More clinical trials must be done before Iressa is approved for general use among people with advanced colorectal cancer.[5]

Anti-Angiogenesis Therapy

Cancer tumors generally take several years to grow. They cannot grow beyond 1–2mm (the size of a pencil point) without ***angiogenesis***, the body's natural process of making new blood vessels. The goal of ***anti-angiogenesis*** is to starve tumors by stopping the production of new blood vessels.

Vascular endothelial growth factor (VEGF) is a protein found at unusually high levels in tumor cells. When it binds with its intended VEGF receptor, a signal is unleashed that causes blood vessels to grow. Anti-angiogenesis therapy aims to stop the growth signal from proteins like VEGF.

Avastin® (bevacizumab) is the first successful monoclonal antibody that attracts and binds to VEGF. By preventing VEGF from binding with its normal receptor, Avastin stops the process that launches blood vessel growth. In 2004, the FDA approved Avastin for the treatment of people with advanced colorectal cancer.[6] When given with 5-fluorouracil (5-FU), Avastin significantly improves the long-term survival of people with advanced colorectal cancer.[7] Common potential side effects from Avastin are high blood pressure, fatigue, and blood clots.



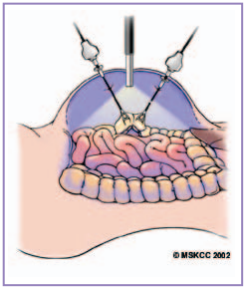
➤ ***FIG 1. ANGIOGENESIS***

Vaccine Therapy

Unlike most vaccines, which prevent the development of an illness, a ***cancer vaccine*** is designed to help the immune system destroy a cancer that has already formed. Vaccines are made from a variety of substances that often include actual cancer cells removed from the person. One difficulty with these vaccines is that the person's cancer cells must be processed immediately after surgery, which requires advanced planning and preparation. Several ongoing clinical trials are evaluating vaccines for metastatic colon cancer *(see www.clinicaltrials.gov)*.[8,9] Other cancer vaccines in clinical trials direct a person's immune system to attack colorectal cancer cells that produce ***carcinoembryonic antigen (CEA)***, which is present at high levels in colorectal cancer. CEA is used as a ***tumor marker*** to monitor a person's response to chemotherapy.

Surgical Advances

Laparoscopic Surgery



➤ ***FIG 2. LAPAROSCOPIC SURGERY***

Also known as keyhole surgery, this technique has been used for many years for other conditions, but is relatively new in the surgical treatment of colorectal cancer. Laparoscopic surgery involves several small incisions in the abdomen, rather than one large incision. It allows some people to have large bowel resections without major abdominal surgery. In laparoscopic surgery, instruments and a camera are inserted through the incisions, and the surgery is performed with the aid of a monitor to guide what is seen in the camera. Laparoscopic surgery can reduce blood loss, pain, and scarring and speed recovery. Two issues with laparoscopic surgery are the expensive equipment involved, which means that not all hospital operating rooms can afford to offer it, and the need for special training of surgeons to perform it. This is a relatively new and technically challenging technique, so the surgeon's experience deserves attention.

If you are interested in this technique as an option, the website of the Society of Laparoendopic Surgeon *(www.sls.org)* lists surgeons who perform this type of procedure. Early results of a clinical trial evaluating the procedure indicate that participants who had laparoscopic surgery had less discomfort and a shorter hospital stay than those who had the more traditional surgery, but no statistically significant change in quality of life.[10]

Radiofrequency Ablation (RFA)

This new, minimally invasive technique is increasingly used for people with stage IV colorectal cancer that has spread to the liver and for whom surgery is not an option. ***Radiofrequency ablation (RFA)*** is performed with a special needle that contains an electrode. Using CT or MRI scans to see the target, the doctor inserts the needle through the skin, guides it to the tumor, and sends a radiofrequency current to the tumor that destroys it. While eliminating the tumor, RFA also closes up surrounding blood vessels, so bleeding is minimal.[11]

Studies show that RFA is safe, has few major side effects, and produces minimal discomfort. Combining RFA with surgery or chemotherapy, such as infusion chemotherapy to the liver (***intrahepatic***), may reduce the chance that colorectal cancer will recur.[12] Although RFA is unlikely to cure colorectal cancer, it can help relieve symptoms such as abdominal discomfort, bloating, and shortness of breath.

Chemotherapy Advances

Chemotherapy has an important role in treating most stages of colorectal cancer. In stage III disease, adjuvant chemotherapy will reduce the risk of recurrent disease, curing more people than surgical removal of the tumor alone. For people whose cancer has spread, newer chemotherapy regimens can reduce symptoms and improve quality of life.

For many years, the combination of 5-fluorouracil (5-FU) and leucovorin (the active form of the B complex vitamin, folate) was the standard drug treatment for colorectal cancer. Then Camptosar® (irinotecan; CPT-11) plus 5-FU and leucovorin was found to improve the survival rate for stage IV colon cancer. Xeloda® (capecitabine), an orally administered drug that is converted to 5-FU after it is absorbed through the gastrointestinal tract, can improve the survival rate for people with metastatic colorectal cancer who do not have severe renal impairment.

In recent years, new combination chemotherapy regimens have been developed that improve survival rates and have fewer side effects. The two main combinations are ***FOLFOX*** and ***FOLFIRI***. FOLFOX is made up of 5-FU, leucovorin, and Eloxatin® (oxaliplatin), a platinum compound approved in 2002. FOLFIRI is a combination of 5-FU, leucovorin, and Camptosar. FOLFOX is used to treat patients after surgery and has been shown to prevent colorectal tumors from recurring. The most common side effects of the FOLFOX regimen are nerve problems or odd sensations, such as numbness or tingling, fatigue and some nausea. The most common side effect with FOLFIRI is diarrhea, which can be severe. For people with metastatic colorectal cancer, either FOLFOX or FOLFIRI can be used for treatment.[13] Both regimens can cause potentially severe side effects. It is important for people on either regimen to monitor their side effects and communicate with their health care team in order to alleviate them.

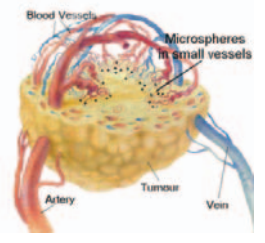
Radiation Therapy Advances

Selective Internal Radiation Therapy (SIRT)

Selective internal radiation therapy (SIRT) is a new treatment for advanced liver cancer that originates from a primary colorectal tumor. SIRT delivers microscopic radioactive dots called SIR-Spheres® directly to the liver tumors. Because it irradiates only the cancer, SIRT enables doctors to deliver up to 40 times more radiation to the tumors than is possible with conventional radiotherapy. SIRT generally does not result in a cure, but it has been shown to shrink some tumors more than chemotherapy alone.

➤ **FIG 3. SIRT THERAPY**

Treatment with SIR-Spheres is given through a catheter in the femoral artery of the upper thigh and threaded through the hepatic artery (the major blood vessel of the liver) to the tumor.



SIRT is typically given as an outpatient treatment in two separate doses, one to each of the liver's two lobes. These treatments occur at least a month apart. Serious side effects include stomach inflammation (gastritis) and peptic ulcers. Other possible side effects are fatigue, nausea and loss of appetite for several days, a low-grade fever that can last for up to a week, and pain in the abdomen for a few hours after the treatment.[14] Doctors often give people medication for the first month to help with side effects.

SIRT is not appropriate or effective for all people whose colorectal cancer has spread to the liver; your health care team can help you decide whether this is a good option for you.

Fractionated Stereotactic Radiosurgery (FSR)

Fractionated Stereotactic Radiosurgery (FSR) is a noninvasive and rarely used surgical technique for people whose colorectal cancer has spread to the brain. In deciding whether FSR is an option, doctors consider the size and location of the tumor and the rate of progression of the symptoms. The results of FSR treatment depend on many factors, such as the person's age, overall health, and whether the primary cancer is still growing. Other options for treatment of brain metastasis may include surgery, radiosurgery, or ***gamma knife surgery***. Gamma knife surgery requires no actual surgical incision and uses beams of gamma radiation to target, reduce the size of and potentially dissolve brain lesions. When there is only a single metastasis to the brain, combining surgery with radiation therapy produces better results than either treatment alone.[15]

Immunotherapy

Clinical trials are testing experimental treatments that boost a person's immune reaction to fight colorectal cancer more effectively. Some treatments use the body's own proteins, such as ***interferon*** (IFN). In clinical trials, IFN has been shown to enhance the ability of 5-FU to destroy colorectal cancer cells. Other proteins currently under investigation are ***Interleukin-4*** (IL4) and ***Interleukin-2*** (IL2), also produced naturally in the body to boost the immune system and fight colon cancer. Side effects to immunotherapy include flu-like symptoms such as fever, malaise, and night sweats. The higher the dose of IFN or ***interleukins***, the greater the side effects.[16] Immune therapies are very promising for the future, but are only available today through clinical trials.

follow-up care after treatment

For every person with colorectal cancer, the cancer journey will be different. Together, you and your doctor will decide which of the following tests are appropriate for you.[17]

Guidelines for Care After Completion of Primary Treatment for Colorectal Cancer

TEST	1st Year	2nd Year	3rd Year	4th Year and On
Physical examination	Every 2 to 6 months	Every 3 to 6 months	Every 3 to 6 months	Every year
Colonoscopy	Once*		Every 3 to 5 years	
Carcinoembryonic antigen *for people with stage II or stage III cancer*	Every 2 to 3 months	Every 2 to 3 months	As determined by your doctor	
Proctosigmoidoscopy *for people with stage II or stage III cancer who did not have pelvic radiation*	Every 6 to 12 months, or as determined by your doctor			

**According to the American Society of Clinical Oncology, a colonoscopy should be done within the first year after primary treatment. If the examination shows no signs of recurrent tumor or polyps, a colonoscopy should be done every 3 to 5 years.*

improving your quality of life with cancer

It is important to know that you **CAN** improve and maintain the quality of your life after cancer treatment. You can proactively manage the physical and emotional burden of cancer and its treatment by becoming more aware of the steps you can take to take control of side effects. This section provides you with some proven strategies for success.

Learn from your health care team about what side effects may occur and which ones can be prevented or managed. Although most cancer treatments are associated with some side effects, you may not have any (everyone's experience is different), and many of the newer, targeted cancer treatments have less severe side effects. Being aware of what might happen during treatment will help you prepare and will reassure you that certain feelings such as fatigue or nausea are, unfortunately, normal. The following table outlines some side effects that you may experience from specific types of treatment.

Managing Side Effects*

Side Effect & Associated Treatment	Tips
Constipation *common with surgery and from anti-nausea medications used for chemotherapy*	➤ Drink plenty of fluids.Warm and hot fluids are especially good to help loosen the bowel. ➤ Eat high-fiber foods, such as bran, whole wheat breads and cereals, and vegetables. ➤ Exercise on a regular basis for at least 30 minutes a day, such as taking a brisk walk. ➤ Talk to your doctor about whether enemas or stool softeners may be helpful for you (do not use these products without talking with your doctor).
Hair loss (alopecia) *common only with chemotherapy*	➤ Use mild shampoos and soft hairbrushes. ➤ Do not dye your hair or get a permanent. ➤ Use sunscreen, a hat, or a scarf to protect your scalp from the sun. ➤ Use low heat when drying your hair.

Side Effect & Associated Treatment	Tips
Diarrhea *common with chemotherapy, radiation therapy, and targeted therapies*	➤ Eat frequent, small meals. ➤ Avoid high-fiber foods and try the BRAT diet: bananas, rice, applesauce, and toast. ➤ Stay away from fried, greasy, and spicy foods; caffeine products; milk and milk products. ➤ Eat potassium-rich foods, such as broccoli, spinach, tomatoes, and bananas. ➤ Drink plenty of fluids to replace what you lose through diarrhea. ➤ Check with your doctor to see if over-the-counter anti-diarrhea drugs such as Immodium® and Lomotil® are appropriate.
Rectal soreness *common with diarrhea associated with treatment*	➤ Avoid straining during bowel movements to prevent bleeding or skin breaks. ➤ Take sitz baths or tub baths with warm water, or apply warm compresses to the rectum. ➤ Obtain a doughnut-shaped inflatable pillow at the drug store to sit on. ➤ Use Preparation H® wipes or baby wipes that don't contain alcohol in place of toilet paper.
Fatigue *common with chemotherapy, radiation therapy, targeted and biologic therapies*	➤ Get plenty of rest; work in small naps during the day if possible. ➤ Try to keep to a daily routine that is reasonable. ➤ Do some form of physical activity or exercise. (Research shows that walking at least 30 minutes a day can improve symptoms. Start slow and work up to a program you can maintain.) ➤ Identify your needs and ask for help. Family, friends, neighbors, and members of your community may be able to help with chores and errands, such as grocery shopping and housework.
Mouth sores *common with chemotherapy*	➤ See your dentist before you start chemotherapy to have your teeth cleaned and take care of problems such as gum disease, cavities, and abscesses. ➤ Brush your teeth and gums after every meal. Use a gentle toothpaste such as Biotene® and a soft toothbrush. ➤ Rinse your toothbrush after each use. ➤ Avoid mouthwashes that contain salt or alcohol. Make your own mouthwash by combining 1 teaspoon of salt, 1 teaspoon of baking soda, and 1 quart of warm water. ➤ Avoid ice chips, which may aggravate the symptoms.

Side Effect & Associated Treatment	Tips
Infection *common after surgery, chemotherapy, and radiation therapy*	➤ Wash your hands often during the day. ➤ Clean your rectal area gently but thoroughly after each bowel movement. ➤ Avoid crowds and people who have conditions you can catch, such as a cold, chicken pox, and the flu. ➤ Be careful not to cut your skin: use an electric shaver instead of a razor, do not tear or cut the cuticles of your nails, and be careful when handling knives.
Loss of appetite *common with chemotherapy, radiation therapy, and biologic therapies*	➤ Eat small meals or snacks whenever you want, rather than focusing on eating 3 meals a day. ➤ Use liquid nutritional products such as Ensure®, Sustecal®, and Carnation Instant Breakfast®, which are nutritious, high in calories, and high in protein. ➤ Snack on nutrition bars. ➤ Take a walk before meals to help stimulate your appetite. ➤ Arrange to eat with family and friends, or watch TV if you are alone.
Nausea and vomiting *common with chemotherapy and radiation therapy*	➤ Ask your doctor about antiemetics, medications that curb nausea and vomiting. ➤ Avoid large meals; instead, eat small meals throughout the day. ➤ Avoid fried, fatty, and sweet foods. ➤ Chew food well for easier digestion. ➤ Eat and drink slowly. ➤ Cook/warm foods in microwave to avoid the smells of cooking, or buy prepared food. When possible, have others do the cooking and food preparation for you.
Sensitivity to cold and heat or peripheral neuropathy *common with chemotherapy*	➤ Be careful when you grasp sharp, cold, or hot objects. ➤ Wear light gloves when handling hot or cold objects. ➤ Use handrails when you go up and down stairs. ➤ Do not wear shoes with slippery soles. ➤ Remove throw rugs or other objects in your home that you might trip on. ➤ Neurontin® (gabapentin) has been shown to have some beneficial effects for peripheral neuropathy. Ask your doctor if this treatment might be right for you.

Side Effect & Associated Treatment	Tips
Pain *common with surgery, illness*	➤ Talk with your doctor about managing your pain and use all pain medications as prescribed. ➤ Drink plenty of fluids and if you are taking narcotics, ask your doctor or nurse about using stool softeners to prevent constipation. ➤ Try relaxation techniques and guided imagery, gentle exercise, or art and music therapy.
Skin problems and rashes *common with targeted therapies and anti-angiogenesis therapy*	➤ Use skin care products, especially ones that contain lanolin or aloe, to prevent and provide relief to chapped and hardened skin. ➤ Keep the skin on and around rashes clean and dry. ➤ Apply lotion to the affected areas twice a day or as prescribed. ➤ Use steroid creams or over-the-counter acne medications ONLY if your doctor approves them. ➤ Avoid exposure to the sun. ➤ Notify your doctor if the rash worsens between treatments.
Flu-like symptoms, rigors, myalgias, headache, nausea, vomiting, diarrhea *Common with interferon, IL2 therapy*	➤ Pre-treat with acetaminophen or non-steroidal anti-inflammatory drugs (NSAIDS). Consult your doctor before using any medication. ➤ Onset of fever, chills usually occurs 4-6 hours after initiation of therapy, so pre-medication is important.

** If you are concerned about how you are reacting to the cancer or the treatments, it is always best to let your doctor know.*

Coping with Changes in Sexual Functioning

It is important for people with cancer to ask their doctor about how the disease or treatment may affect sexual functioning. Health care providers rarely mention this issue, even after the acute phases of treatment, even though many people dealing with colorectal cancer experience a change in sexual interest and activity. It is normal to lose interest in sexual activity from the physical and emotional stresses of cancer, fatigue, or pain, so give yourself and your partner some time to adjust. You can continue affectionate behavior until you feel ready for sexual activity.

Radiation or surgery for colorectal cancer can have an impact on sexual functioning if the nerves at the base of the spine are harmed. For men, radiation therapy aimed at the pelvic area can injure blood vessels that are needed for erection. Women may notice a reduction in physical sensation and

arousal in the genital area, which can mean less lubrication and vaginal irritation during intercourse.

You may find the following options helpful for coping with a change in sexual functioning:

Counseling for Sexuality Issues

Counseling (either individual sessions or with your partner) may help with sexual issues, including anxiety about sexual functioning, body image, and feelings of loss, depression, or sadness you may be experiencing because of the cancer diagnosis.

Vaginal Dryness

For women bothered by vaginal dryness, many lubricants are available, such as Replens™, AstroGlide®, and K-Y® Products. Ask your doctor or gynecologist for more recommendations about making sex more comfortable. Vaginal dilators used with a lubricant may be helpful with vaginal or anal sex. Additionally, pelvic radiation can decrease the width and diameter of the vagina.

Fertility Issues

Some types of chemotherapy and radiation to the pelvis can push women into an early menopause or make them infertile. These situations can have a profound impact on a woman's sense of herself and her sexuality. Acknowledging these very real losses and getting support from loved ones, a support group, or a therapist may help.

Erectile Problems

A variety of options may restore erectile functioning to men who are having problems with erections. These include Viagra®, Cialis®, and Levitra®; vacuum constriction or pump devices that draw blood into the shaft of the penis; injections of medication directly into the penile shaft to stimulate erections or help maintain them; and penile implants.

Ostomies

When cancer surgery requires an ostomy, people can have both psychological and practical matters to address. The United Ostomy Association *(www.uoa.org)* and the American Cancer Society *(www.cancer.org)* have visitation programs through which people who have experience with ostomies can share strategies and assist with the adjustment. The United Ostomy Association also provides extensive information for gay and lesbian ostomates.

The American Cancer Society has two booklets on sexuality and cancer, one for men and one for women. Both are available from the American Cancer Society (1-800-ACS-2345). The American Cancer Society also has a section on their website *(www.cancer.org)* entitled "*Sexual Orientation and Cancer.*" The Mautner Project for Lesbians with Cancer (1-866-MAUTNER), The Gay and Lesbian National Hotline (1-888-THE GLNH), and the Gay and Lesbian Medical Association (1-415-255-4547) all provide gay and/or lesbian-focused health and sexuality information and resources.

End of Life Issues and Concerns

Sometimes, in spite of the best medical treatments and the most conscientious self-care, cancer will recur. If cancer comes back, it is important for the person with cancer and family members not to feel responsible or look for reasons. No cancer treatment can provide an absolute guarantee of cure.

A clinical trial may offer new treatments, but the anxieties and fear of loss often are more intense after cancer returns than they were after the initial diagnosis. A recurrence can seem more life-threatening, and it may be hard to feel a sense of hopefulness.

Hospice

Hospice care is available to a person whose colorectal cancer cannot be controlled and who is expected to die within six months. Unfortunately, many doctors and families are uncomfortable addressing this issue and put off referrals to hospice programs until death is near, when much less can be done to help the person and the family prepare to cope.

In addition, hospice provides continuing contact and support for family and friends for at least a year after the death of a loved one. Most insurance plans and Medicare cover the costs of hospice care. For more information about hospice care, contact the National Hospice and Palliative Care Organization *(www.nhpco.org)* and the Hospice Foundation of America *(www.hospicefoundation.org)*.

Some important things to remember about hospice:

- Hospice treats the person, not the disease.
- Hospice offers palliative rather than curative treatment.
- Hospice addresses the physical, emotional, social, and spiritual needs of the person with cancer and his or her significant others.
- Hospice allows people to spend their last days at home, alert and free of pain, among their loved ones.
- Hospice emphasizes quality rather than length of life.
- Hospice offers help and support to the person and family 24 hours a day, 7 days a week.
- Hospice helps family members and loved ones cope with the experience of the person's dying.

Finding Hope

It is difficult to talk about cancer and new discoveries in treatment without talking about hope. By being ***Patient Active,*** you can balance optimism and hope with a realistic appraisal of any new treatment or services and it's appropriateness for you. Being ***Patient Active*** means sifting through information more effectively, regaining a sense of control over the disease and finding hope that you are not alone.

resources for more information and support

The Wellness Community

919 18th Street, NW, Suite 54
Washington, DC 20006
1-888-793-WELL (toll free)
www.thewellnesscommunity.org

Provides support, education and hope in a home-like setting to all people affected by cancer. There are 22 facilities in the United States, with 28 satellite offices, two international facilities, and online support groups.

American Cancer Society

1599 Clifton Road NE
Altanta, GA 30329
1-800-ACS-2345 (toll free)
www.cancer.org

Provides referral to local American Cancer Society offices for patient educational materials, support programs, information, and referrals.

American Institute for Cancer Research

1759 R Street, NW
Washington, DC 20009
1-800-843-8114 (toll free)
www.aicr.org

Supports research; provides public education materials in the area of diet, nutrition, and cancer.

American Society of Clinical Oncology

1900 Duke Street, Suite 200
Alexandria, VA 22314
www.asco.org and www.plwc.org

A national organization of oncologists and researchers, dedicated to cancer prevention, treatment, education, and research; provides concise cancer information through the Internet to the public.

American Society of Colon and Rectal Surgeons

85 W. Algonquin Road, Suite 550
Arlington Heights, IL 60005
1-847-290-9184
www.fascrs.org

Provides patient information on gastrointestinal conditions and colon and rectal surgery.

Cancer*Care*, Inc.

275 Seventh Avenue
New York, NY 10001
1-800-813-HOPE (toll free); (212) 302-2400
www.cancercare.org

Provides free counseling, support groups, education, information, and referral to cancer patients and their families to cope with the psychological and social consequences of cancer.

Colon Cancer Alliance

175 Ninth Avenue
New York, NY 10011
(212) 627-7451
www.ccalliance.org

Provides patient support services and information, and supports public education, research, and advocacy related to all aspects of colorectal cancer.

Colorectal Cancer Coalition (C3)

4301 Connecticut Ave NW, Suite 404
Washington, DC 20008
(202) 244-2906
www.c-three.org

Conducts research and advocacy, and provides awareness so that people know that colorectal cancer is preventable, treatable and beatable.

Gilda's Club Worldwide

322 Eighth Avenue, Suite 1402
New York, NY 10001
1-888-GILDA 4 U (445-3248) (toll free)
www.gildasclub.org

Provides free patient and family support services and education in locations around the world.

Mautner Project for Lesbians with Cancer

1707 L Street NW #230
Washington, DC 20036
(202) 332-5536
www.mautnerproject.org

Provides resources, support and referrals for lesbians with cancer and their loved ones and supporters.

National Cancer Institute Cancer Information Service (CIS)

1-800-4-CANCER (toll free)
www.cancer.gov/newscenter

Provides information on cancer, treatment, living with cancer, research and clinical trials.

National Coalition for Cancer Survivorship

1010 Wayne Avenue, 5th Floor
Silver Spring, MD 20910
1-877-622-7937 (toll free)
www.canceradvocacy.org

Raises awareness of cancer survivorship through publications; provides education to eliminate the stigma of cancer; advocates for insurance, employment, and legal rights for people with cancer.

Patient Advocate Foundation

700 Thimble Shoals Blvd, Suite 200
Newport News, VA 23606
1-800-532-5274 (toll free)
www.patientadvocate.org

Serves as a liaison between patients and their insurer, employer and/or creditors to resolve insurance, job retention and/or debt crisis matters relative to their diagnosis. Aims to assure access to care, maintenance of employment and preservation of financial stability.

Society of Laparoendoscopic Surgeons

7330 SW 62nd Place, Suite 410
Miami, FL 33143
1-800-446-2659 (toll free); (305) 665-9959
www.sls.org

Provides patient information on laparoscopic surgery and how to locate a laparoscopic surgeon.

glossary

Adenocarcinoma: a malignant tumor arising from glandular tissue.

Adenomas: a type of polyp in the colon that can become cancerous.

Adjuvant therapy: treatment used in addition to and following the primary treatment to cure, reduce, control or palliate the cancer.

Anastomosis: a procedure to connect healthy sections of the intestine after the cancerous portion has been removed.

Angiogenesis: the process of a cell developing new blood vessels.

Anti-angiogenesis: a process in which the development of new blood vessels are blocked with drugs, cutting off the tumor's supply of oxygen and nutrients and preventing its continued growth and spread to other parts of the body.

Antibody: a protein in the serum (liquid part of the blood) produced by a type of white blood cell called a B lymphocyte that helps defend against foreign material such as agents causing infection.

Antigen: any substance that causes the body to produce natural antibodies.

Apoptosis: the self-destruction of a cell.

Biopsy: the removal and examination of tissue from the body for the purpose of diagnosis, usually under a microscope. A biopsy may also be taken to evaluate the effectiveness of medical treatments such as chemotherapy or radiation.

Cancer vaccine: a cancer treatment in development that helps the immune system recognize cancer cells as harmful and therefore targets them for destruction.

Carcinoembryonic antigen (CEA): a tumor marker that is sometimes found in an increased amount in the blood of patients with colorectal and some other cancers, and may also be elevated due to a variety of noncancerous conditions.

Chemotherapy: the treatment of cancer with drugs.

Clinical trial: a systematic evaluation of a possible new cancer treatment conducted with cancer patients after the treatment has had some benefits in animal or laboratory testing.

Colorectal surgeon: colon and rectal surgeons are experts in the surgical and non-surgical treatment of colon and rectal problems. They have completed advanced training in the treatment of colon and rectal problems in addition to full training in general surgery.

Colonoscopy: the visual examination of the colon or large bowel through a lighted, flexible tube inserted through the rectum.

Colostomy: a surgical procedure by which an opening is created between the colon and the outside of the abdomen to allow stool to be emptied into a collection bag.

Colostomy reanastomosis: a surgical procedure to close a colostomy.

Comprehensive Cancer Center: institutions designated by the National Cancer Institute that engage in interdisciplinary cancer research and treatment.

Epidermal growth factor receptor (EGFR): key element in tumor growth and metastasis.

FOLFIRI: chemotherapy regimen that uses different doses and schedules of 5-FU and Irinotecan.

FOLFOX: chemotherapy regimen that uses different doses and schedules of 5-FU, Leucovorin and Oxaliplatin.

Fractionated Stereotactic Radiosurgery: a noninvasive surgical technique using radiation for patients with a primary colorectal cancer that has metastasized to the brain.

Gamma knife surgery: surgery on the brain using gamma radiation to reduce and potentially dissolve brain lesions. The surgery does not require a surgical opening.

Grade: a term used to describe how likely the cancer is to grow, based on how the cancer cells resemble normal cells (close resemblance = lower grade, slow growing cancer cells vs. distant resemblance = higher grade, fast growing cancer cells).

Hospice: a concept of supportive care to meet the special needs of patients and family during the terminal stages of illness which focuses on improving quality of life rather than curing the disease. The care may be delivered in the home or hospital by a specially trained team of professionals.

Interferon: a naturally produced chemical released by the body in response to viral infections. Interferon can be artificially produced and is used as a form of immunotherapy.

Interleukin: a naturally produced chemical released by the body.

Interleukin–2 (IL2): a protein produced naturally in the body that boosts the immune system and fights colon cancer. This can also be produced in the laboratory.

Interleukin–4 (IL4): a protein produced naturally in the body that boosts the immune system and fights colon cancer.

Intrahepatic arterial infusion: infusion of chemotherapy directly into the liver.

Ionizing radiation: radiation made or given off by x-ray procedures, radioactive substances, and other sources.

Laparoscopy: otherwise known as "keyhole" surgery, involves several small incisions that are made in the abdomen, rather than one large surgical incision. Instruments and a camera are inserted through the holes and the surgery is performed using a monitor to guide what is seen in the camera.

Medical Oncologist: a doctor who specializes in the treatment of cancer.

Metastasis: the spread of the cancer from the first or primary site to another part of the body.

Modified Duke's classification: a staging method for colon cancer.

Monoclonal antibodies: artificially manufactured antibodies, which are all identical and specifically designed for a wider variety of purposes including finding targets on cancer cells for diagnostic or treatment purposes.

Neoadjuvant therapy: the administration of chemotherapy prior to surgery to shrink the tumor.

Patient Active Concept: "People with cancer who participate in their fight for recovery will enhance the quality of their lives and may improve the possibility of recovery." – philosophy of Dr. Harold Benjamin, founder of The Wellness Community.

Palliative chemotherapy: treatment aimed at the relief of pain, symptoms and/or to prevent further complications but not intended to cure the disease.

Polyp: a growth of tissue protruding into a body cavity, such as a colon or rectal polyp. Polyps can be benign or malignant.

Primary tumor: the site of the original tumor.

Prognosis: the projected outcome of a disease; the life expectancy.

Radiation therapy: the use of high-energy penetrating x-rays to treat or control disease.

Radiofrequency ablation: a technique in which radio waves are transmitted through an ultrasound probe directly on a tumor to heat it up and destroy it.

Resection: surgery.

Remission: complete or partial disappearance of the signs and symptoms of disease.

SIRT: Selective Internal Radiation Therapy is a treatment for advanced liver cancer originating from a primary colorectal cancer. It involves the use of microscopic radioactive spheres directly to the site of the tumors in the liver.

Staging: doing tests and exams to determine the extent of cancer, especially whether it has spread from the original site to other parts of the body.

Stoma: an artificial opening between two cavities or between a cavity and the surface of the body.

TNM system: staging system for colon cancer. T is used to describe the size and extent of the main tumor. The T stage is numbered 1 through 4. N is for nodes; 0 is used then no nodes are involved, N1 when 1-3 nodes are involved and N2-3 when more than 3 nodes are positive. M is used to describe whether the cancer has spread to other parts of the body. M0 means that there is no evidence of distant metastasis and M1 indicates that the tumor has spread to another part of the body.

Targeted therapies: the newest category of cancer treatments that act in specialized ways to destroy or act against tumor cells and often avoid damaging normal cells.

Tumor marker: a chemical substance found in increased amounts in the body fluids of some cancer patients which may be an indication that cancer is present in the body. The CEA is a tumor marker that may indicate the presence of colon cancer.

Tyrosine kinase: an area within the human Epidermal Growth Factor Receptors (EGFRs) that is in charge of allowing cells to divide and multiply.

Vascular endothelial growth factor (VEGF): required for the production of new vascular tissue (i.e., blood vessels).

abbreviations and acronyms

CEA	carcinoembryonic antigen
CPT-11	Camptosar®
EGF	epidermal growth factor
EGFR	epidermal growth factor receptor
FDA	Food and Drug Administration
FOLFIRI	5-FU, leucovorin, and Camptosar®
FOLFOX	5-FU, leucovorin, and Eloxatin®
FSR	fractionated stereotactic radiosurgery
5-FU	5-fluorouracil
IFN	interferon
IL2	interleukin-2
IL4	interleukin-4
RFA	radiofrequency ablation
SIRT	selective internal radiation therapy
TWC	The Wellness Community
VEGF	vascular endothelial growth factor

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Frankly Speaking About new discoveries in cancer

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